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Supply

**HYPERGOLIC STORAGE FACILITY
OPERATIONS**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction establishes the rules and defines the process for properly coordinating and performing work operations at the Hypergolic Storage Facility (HSF), and applies to all Air Force military organizations and contractors engaged in the use of propellant operations on Vandenberg AFB. This instruction covers Operator and User requirements when using the HSF for propellant operations, storing drummed propellants, and excessing operationally generated hazardous waste. This instruction also addresses Operator and User requirements to ensure compliance to OSHA's Process Safety Management (PSM) Standard 29CFR 1910.119 and is consistent with Air Force Occupational Safety and Health (AFOSH) Standards or Department of Labor Occupational Safety and Health Act (OSHA) Standard 29CFR 1910.119.

SUMMARY OF REVISIONS

The revision of this publication is to meet the format standards required by the Air Force. No content material has changed. Some required format changes have been made to allow for the conversion process. The * denotes administrative changes only.

Attachments:

1. Attachment 1: Glossary of References, Abbreviations, Acronyms, and Terms.

2. Policy.

2.1. The Hypergolic Storage Facility (HSF) is a facility for storing, dispensing, transferring, and sampling of hypergolic propellants. Vandenberg Air Force Base's Permit to Operate (PTO) as authorized and granted by Santa Barbara County Air Pollution Control District (SBCAPCD) limits the type of operations that will be performed at the facility. The HSF Operator is responsible for all operations and maintenance performed at the facility for ensuring compliance with PTO conditions on behalf of

the Commander, 30th Space Wing (30 SW/CC), 747 Nebraska Ave Ste. A200-1, Vandenberg AFB CA 93437-6261.

2.2. Users may store their program unique propellant at the HSF and may conduct propellant operations utilizing User furnished equipment, provided that the conditions of this instruction and the Permit To Operate (PTO) have been satisfied. These conditions are established to ensure operations of the responsible Fuels Management Office (30 LSS/LGLF), 806 13th Street, Ste. 2, Vandenberg AFB CA 93437-5224, will be conducted efficiently, safely, and will comply with all regulatory permits and limits.

3. Responsibilities:

3.1. The Commander, 30 SW is the authority for the HSF and is responsible for its operation.

3.2. The Space Fuels Flight (30 LSS/LGLF) is the responsible Fuels Management Office (FMO) for hypergolics. This Office also provides program management on the Unconventional Propellants (UP) Contract.

3.3. The Environmental Management Office (30 CES/CEV) is responsible for:

3.3.1. Providing technical expertise in the area of environmental management for the 30 SW.

3.3.2. Reviewing and coordinating environmental approval with all regulatory agencies.

3.3.3. All operations conducted at the HSF.

3.4. The Systems Safety Office (30 SW/SES) is responsible for :

3.4.1. Providing technical expertise in the area of systems safety for the 30 SW.

3.4.2. Reviews, coordinates, and is the Safety approval authority on all procedures involving hazardous operations at the HSF.

4. Facility and Process Description. The HSF is a consolidated area for Vandenberg AFB to store and handle hypergolic fuels and oxidizers. This propellant is Air Force Stock Fund material and is managed by San Antonio Air Logistics Command (SA-ALC) Aerospace Fuels Directorate, 1014 Billy Mitchell Blvd., Kelly AFB, TX 78241-5603. The facility is divided into two distinct facilities; one used to store fuels and the other used to store oxidizer. The fuel and oxidizer, Building Numbers 976 and 977 (fuel), are located near the intersection of Coast and Mesa Roads; Building Numbers 974 and 975 (oxidizer), are located near Coast and Mesa Roads, Vandenberg AFB. Fuel and oxidizer are used to propel booster and payload launch systems at various launch facilities on Vandenberg AFB.

4.1. Fuel Facility. The primary hypergolic fuel stored at the facility is Aerozine-50 (A-50), a 50/50 blend of unsymmetrical dimethyl hydrazine (UDMH) and anhydrous "neat" hydrazine (N_2H_4). Additionally, a small amount of fuel, typically hydrazine (N_2H_4), UDMH or mono-methyl hydrazine (MMH) used for spacecraft propulsion systems, is stored in stainless steel drums.

4.1.1. Fuel is delivered to the HSF in bulk form by commercial trailers and stored in the 28,000-gallon tanks. Trailers withdraw fuel as needed from the storage tanks for delivery to on-base Space Launch Complexes and various Vandenberg AFB locations. All bulk fuels at the HSF are stored under a nitrogen blanket.

4.2. Oxidizer Facility. The primary oxidizer stored at the facility is nitrogen tetroxide (N_2O_4 or N_2O_4 Mon-1), along with a relatively small amount of high purity payload grade N_2O_4 Mon-1 or Mon-3. The payload grade Mon-1,-3 N_2O_4 , is typically stored in stainless steel cylinders (2000 pound capacity) and is used for spacecraft propulsion systems.

4.2.1. N_2O_4 oxidizer is delivered to the HSF in bulk form by commercial trailers and stored in the 28,000-gallon tanks. Trailers withdraw oxidizer as needed from the storage tanks for delivery to on-base Space Launch Complexes. All bulk oxidizers at the HSF are stored under a nitrogen blanket.

4.2.2. A relatively small amount of oxidizer will be delivered to the HSF in cylinders and stored there for use at the launch complexes. Some of the oxidizer is often times transferred from the cylinders into trailers at the HSF.

4.3. Equipment Description. The facility consists of twelve 28,000-gallon capacity above-ground stainless steel, cylindrical pressure tanks (six each on both fuel and oxidizer), used for storing hypergolic fuel and nitrogen tetroxide (N_2O_4) oxidizer. Each tank is equipped with two overpressure relief valves, connected to a common 50 foot emergency vent stack.

4.3.1. The delivery vessel "hardstands" loading and unloading transfer systems for both commodities are comprised of trailer parking areas, piping, including flanges and threading connections, valves, filter assemblies, vapor flex hoses, liquid load/unload flex hoses, and two 120-gallon per minute transfer pumps powered by a 7.5 horsepower electric motor.

4.3.2. Both the fuel and oxidizer units have a Vapor Scrubbing System rated at 400 standard cubic feet per minute (SCFM). The Fuel Vapor Scrubber System is comprised of a vertical bubble-cap distillation column, vent system, 350-gallon non-recirculating sump tank, and an automatic waste discharge system. The Oxidizer Vapor Scrubber System consists of a four-tower packed bed scrubbing system, an 850-gallon recirculating sump tank, conductivity monitor, and electrical and mechanical control system.

4.3.3. Each unit also has an operation and configuration piping system connecting each units' six storage tanks, transfer systems, emergency vent stacks, and vapor scrubber systems. The piping systems on both units include two 250 gallon capacity liquid/vapor separation pressure vessels, each equipped with overpressure relief valves.

5. Propellant Operations.

5.1. User Pre-operational Responsibilities/Requirements. Through verbal communication, at a minimum of 45 days prior to scheduled activities, User will notify the OCC of operations requiring support. User will follow-up the verbal request by providing the OCC with written communication 30 days prior to the start of scheduled operations.

5.2. Procedure Requirements. A written operating procedure will be provided to the OCC a minimum of 30 days prior to the start of scheduled operations. The procedures will be reviewed and coordinated with the OCC and 30 SW/SES, 806 13th Street, Ste. 3, Vandenberg AFB CA 93437-5230, prior to commencing any operation. This is required to ensure the HSF Operator is familiar with all hazards associated with the operation/process, and proper safety precautions are instituted to mitigate such hazards. This is in accordance with Eastern and Western Range Safety Requirements 127-1

(available through 30SW/SES Bldg. 7015) and OSHA 29CFR 1910.119, Process Safety Management (PSM) requirements.

5.2.1. Changes/deviations to an approved operating procedure must also be reviewed and coordinated with the HSF Operator and 30 SW/SES prior to commencing operations. It is the User's responsibility to provide this procedure within sufficient time to allow for an appropriate review to occur without impacting schedule requirements.

5.3. User Safety Requirements. Both User and HSF Operator personnel will be responsible for monitoring and ensuring the safety of the scheduled operation. Any identifiable breach of safety or environmental practices will immediately be called to the attention of the Team Chief and the Safety representative and the situation made safe prior to continuing operation. The Team Chief and the Safety representative have the final authority for initiating or terminating any hazardous operation at the HSF. Any incident, regardless of assessed level of significance, will be reported and dispositioned in accordance with the Eastern and Western Range Safety Requirements 127-1, and applicable approved operational procedure. Notify 30CES/CEV, 806 13th Street, Ste. 116, Vandenberg AFB CA 93437-5242, of any violation of environmental practices.

5.3.1. In the event of an emergency, Users will follow the direction of the Team Chief and immediately safe the system. Great care will be taken not to expose personnel to propellant vapors.

5.3.2. In addition to adhering to the PSM requirements as referred to in paragraph 8., it is the HSF Operator policy that all HSF Users wear proper safety attire while performing operations on the HSF hardstand and at drum storage areas. This includes the use of American National Standards Institute (ANSI) approved hard hats, safety glasses, and proper footwear, i.e. steel-toed shoes.

5.4. Protective Clothing and Equipment Responsibilities/Requirements. User will identify, document, and submit to the OCC, all protective clothing, training, and equipment required to perform the operation.

5.5. User Training Requirements. It is the Users' responsibility to ensure all personnel are properly trained in the use of protective equipment prior to performing the operation. This includes the following for SCAPE/respirator operations:

5.5.1. Ensuring personnel performing SCAPE operations, or operations requiring use of a respirator, have had the appropriate medical examination (physical) within the past (1) year, and are physically able to perform the task.

5.5.2. Ensuring personnel have donned a SCAPE suit and have participated in a SCAPE operation within the past (1) year, or have had refresher SCAPE training within the past (1) year, whichever occurs last.

5.5.3. No personnel will be allowed to perform a SCAPE operation without meeting the above requirements as specified in paragraphs 5.5.1. and 5.5.2.

5.5.4. Users will be required to submit to the OCC the names of individuals performing the operation(s) and written certification that these individuals have received an annual physical. This can be accomplished via a written letter to the HSF operator OCC.

5.5.5. According to OSHA 29CFR 1910.119, paragraph (h), the User will ensure the following:

5.5.5.1. That each User employee is trained in the work practices necessary to safely perform their job.

5.5.5.2. That each user employee is instructed in the known potential fire, explosion, or toxic release hazards related to their job and the process, and the applicable provisions of the emergency action plan.

5.5.5.3. Document that each User employee has received and understood the training required by this paragraph. The User shall prepare a record which contains the identity of the employee, the date of training, and the means used to verify that the employee understood the training.

5.5.5.4. That each User employee follows the safety rules of the facility including safe work practices to provide for the control of hazards during operations such as lockout/tagout, confined space entry, opening process equipment or piping, and control over entrance into a facility by HSF operator personnel.

5.5.5.5. Advise the HSF operator of any unique hazards presented by the User's work, or of any hazards found during the User's work.

5.6. User Environmental Requirements. User will provide drums (containers) if hazardous waste disposal is required. User will coordinate with the HSF operator to ensure that the proposed operation will not violate the conditions of the PTO prior to requesting use of the facility. This coordination will occur during the pre-operational procedure review activity. Any discrepancies will be identified during this procedure review process. User will follow procedures in the Vandenberg AFB Hazardous Waste Management Plan (available through 30 CES/CEV, Bldg. 7015).

5.7. User Operational Requirements. User will provide trained personnel to operate their respective equipment and provide technical expertise on the User side of the interface during operations at the HSF as identified in paragraph 5.5.

5.8. User Post Operational Requirements. User will safe their systems, verify that no toxic vapors exist, package, characterize, and provide completed documentation on all hazardous waste generated during the operation.

5.8.1. User will wash down equipment and hardstand area with water and use a portable vapor detector (PVD) to ensure area is free of vapors.

5.8.2. All User equipment must be removed within 24 hours after completion of scheduled operations. Equipment required for the operation which is to remain at the HSF hardstand must be coordinated with the OCC.

5.9. HSF Operator Pre-operational Re-sponsibilities/Requirements. HSF Operator pre-operational responsibilities and requirements include the following:

5.9.1. Coordinate appropriate protective clothing and equipment for all identified Users based on personnel measurements and fit check during training activities.

5.9.2. Maintain and provide the SCAPE equipment and consumables.

5.9.3. Provide all necessary training (SCAPE, ELSA, Dragger, air purifying or air supplied respirator, etc.) to Users, as requested prior to the start of operations.

5.9.4. Ensure all PSM requirements, as identified in paragraph 8., are met prior to the start of operations.

5.9.5. Plan, schedule, and monitor User operations at the HSF based upon approved User inputs.

5.9.6. Evaluate all written procedures and/or proposed operations for conformance with the PTO.

5.10. HSF Operator Operational Requirements. HSF Operator responsibilities and requirements during the operational phase of the activity include the following:

5.10.1. Deliver SCAPE hardware and support personnel 60 minutes prior to the estimated time that acceptable required weather conditions are forecasted to occur.

5.10.2. Provide support personnel to assist Users during donning and doffing activities.

5.10.3. Provide personnel to monitor THC and OD/Test support during operations.

5.10.4. Provide personnel required for operation of HSF vent system and GN₂ system.

5.10.5. Ensure the HSF is in a safe operating configuration prior to allowing operation to occur.

5.10.6. Ensure proper Range and OD/Test support scheduling.

5.10.7. Provide the Team Chief and personnel to conduct and monitor the scheduled operations and operate the HSF Operator side of the HSF interface for the scheduled operation.

5.11. HSF Operator Post-Operational Requirements. HSF Operator post-operational activities include the following:

5.11.1. Provide support personnel to assist Users during donning/doffing activities.

5.11.2. Assist User in processing hazardous waste resulting from the operations, and receive the identified waste into the Hyper CAP.

5.11.3. Provide hazardous waste sampling, when required, or as requested by the User.

6. Drum and Cylinder Requirements. The following paragraphs establish the procedure to conduct weekly inspections of all drums and cylinders containing liquid propellants.

6.1. General Information. The HSF is the only SA-ALC authorized bulk/drum storage facility on Vandenberg AFB. The commodities that are stored at the HSF in drums and cylinders present potential danger to personnel due to the absence of safety monitoring devices and alarming devices. As a result, weekly drum inspections have been instituted to ensure personnel at the facilities are not exposed to stored toxic commodities.

6.2. User Drum and Cylinder Responsibilities/Requirements. On a routine basis, the User will review their requirements for the quantity of drums/cylinders they are maintaining for use. If the User determines they no longer have a need for the commodity, they will provide a letter to the HSF Operator requesting disposition of the commodity.

6.2.1. User will be required to sample excess commodity.

6.2.2. If sample results are deemed unacceptable, the User must seek alternative means to dispose of the excess (i.e., as hazardous waste) and will coordinate the disposal process with the HSF Operator.

6.2.3. Users will perform periodic drum/cylinder inspections to ensure:

6.2.3.1. Seals are intact.

6.2.3.2. There is no excessive corrosion on drums/cylinders.

6.2.3.3. Drums/cylinders are in safe configuration.

6.2.4. Users will be responsible for correcting any discovered discrepancies.

6.2.5. Users must immediately respond to and safe a drum/cylinder identified as "leaking."

6.3. HSF Operator Drum and Cylinder Responsibilities/Requirements. HSF Operator responsibilities/requirements for drums and cylinders include the following:

6.3.1. Perform a daily walkdown of the storage area to observe any degradation of containers (e.g., leaking, swollen containers, corrosion, unsafe conditions).

6.3.2. Perform a weekly drum/cylinder inspection using the PVD. The PVD probe will be placed in contact with the container around bung openings and seams to ensure containers are leak-free.

6.3.3. The OCC will notify drum owners of identified discrepancies on their containers and schedule a date and time for the owner to report to the HSF and correct any deficiency.

6.3.4. HSF Operator Technicians will document identified discrepancies during weekly inspections, e.g., broken seals, excessive corrosion, or an unsafe condition. Discrepancies noted on all AF Stock Fund drum/cylinders will be documented in accordance with HSF Operator internal procedures.

6.3.5. Provide guidance to drum/cylinder owners on how to correct container deficiencies.

6.3.6. Document any leaks resulting in fugitive emissions and report such leaks to 30 CES/CEV, consistent with SBCAPCD Rules.

6.3.7. Conduct a 24 hour leak check of drums prior to shipping drums off the confines of the HSF. Containers will be tilted on their sides for 24 hours to ensure the container is leak-free and there is no visible liquid or PVD reading.

6.3.8. Coordinate with SA-ALC on all matters associated with the use of drums/cylinders.

6.3.9. Maintain an accurate inventory of all drums/cylinders stored at the HSF and provide weekly updates to the OCC and Base Fire Department. Inventories will be provided on a monthly basis to AF Security Police (30 SPS/SPOS-M), 108 Colorado Ave, Vandenberg AFB CA 93437-6300.

6.3.10. Accomplish resealing or safing of drums containing AF Stock Fund Material.

7. Operationally Generated and Industrial Hazardous Waste.

7.1. User Responsibilities. User must process any hazardous waste or Industrial Wastewaters, generated as a result of an operation, in the following manner:

7.1.1. It is the User's responsibility to provide for transportation or a waste drum to collect any waste generated as a result of the equipment purging, flushing, and decontamination process.

7.1.2. User will provide all sampling equipment and sample all waste collected as a result of the decontamination process after an operation.

7.1.3. User will coordinate all operationally or Industrially generated hazardous waste with the OCC to ensure proper disposal after completion of an operation.

7.2. HSF Operator Responsibilities for Operationally Generated and Industrial Hazardous Waste. The HSF Operator will review User procedures to ensure proper procedures and equipment are followed and provided when performing an operation. The HSF Operator will process all operationally generated hazardous waste or Industrial Waste in accordance with Vandenberg AFB policies.

8. Process Safety Management (PSM) Requirement. OSHA's 29CFR 1910.119 Standard sets forth the requirements for managing hazards associated with processes using highly hazardous chemicals. *Process* means any activity involving a highly hazardous chemical. These activities, single or in combination, include any use, storage, manufacturing, handling, or on-site movement of such chemicals. This Standard and its application pertains to all operational activity at the HSF.

8.1. User Category Requirements and PSM Responsibilities. Paragraph (h) of the Standard defines User (Contractors) Responsibilities. Users working at the HSF can be categorized as follows:

8.1.1. Personnel working the process inside the fenced area. (Category 1.)

8.1.2. Personnel working other than the process inside the fenced area. (Category 2.)

8.1.3. Personnel working outside the fenced area but within the boundaries of the Toxic Hazard Corridor (THC). (Category 3.)

8.2. Category 1 Requirements. Personnel in Category 1, will be instructed on the hazards associated with the process and given an in-depth briefing by HSF Operator representatives. Personnel will also have access to any data the HSF Operator has compiled under PSM. Users in turn will provide the HSF Operator information on their process and any hazards associated with conducting the process. Users will also ensure personnel are trained in the work practices necessary to safely perform their job function as required by OSHA 29CFR 1910.119 paragraph (h)(3)(i).

8.3. Category 2 Requirements. Personnel in Category 2 will be given a Safety briefing by HSF Operator representatives. User, will ensure that their personnel are trained in the work practices necessary to safely perform their job function as required by OSHA 29CFR 1910.119 paragraph (h)(3)(i).

8.4. Category 3 Requirements. Personnel in Category 3 will be required to provide the HSF Operator with information necessary to determine the extent of the work and the intended schedule of the work.

8.5. HSF Operator PSM Responsibilities. During the Safety briefing process to operational Users of the HSF, the HSF Operator will inform Users of the hazards associated with performing operations at the HSF. The HSF Operator will also:

8.5.1. Explain to all Users the applicable provisions of emergency action procedures.

8.5.2. Review all User work activities at the HSF to determine any associated hazards involving User work operations.

8.5.3. Make all Process Hazards Analysis Records available for Users' review at all times.

8.5.4. Monitor and perform surveillance over User operations.

JEFFERY D. HOLT, Capt., USAF
Commander, 30th Logistics Support Squadron

Attachment 1**GLOSSARY OF REFERENCES, ABBREVIATIONS, ACRONYMS, AND TERMS*****References***

Eastern and Western Range Safety Requirements 127-1

Occupational Safety and Health (OSHA) Standard 29CFR 1910.119, *Process Safety Management (PSM)*.

Vandenberg Air Force Base Hazardous Waste Management Plan.

Abbreviations and Acronyms

ANSI—American National Standards Institute

CAP—Collection Accumulation Point

CAT—Category

CGA—Compressed Gas Association

ELSA—Emergency Life Support Apparatus

ECU—Environmental Control Unit

FMO—Fuels Management Office

HSF—Hypergolic Storage Facility

MON—Mono-Methyl Hydrazine

MMH—Mono-Methyl Hydrazine

OCC—Operational Control Center

OD—Operations Directive

OSHA—Occupational Safety and Health

PEMO—Protective Equipment Maintenance Operation

PPM—Parts Per Million

PSM—Process Safety Management

PTO—Permit to Operate

PVD—Portable Vapor Detector

SA-ALC—San Antonio Air Logistics Command

SBCAPD—Santa Barbara County Air Pollution Control District

SCAPE—Self Contained Atmospheric Protection Ensemble

SCFM—Standard cubic feet per minute

SPEC—Specification

TC—Team Chief

THC—Toxic Hazard Corridor

UDMH—Unsymmetrical Dimethyl Hydrazine

UP—Unconventional Propellants

Terms

Air Force Stock Fund Material—Liquid propellant stored at the HSF is Air Force Stock Fund Material, managed by San Antonio Air Logistics Command (SA-ALC), Aerospace Fuels Directorate, Kelly AFB TX. The HSF Operator is responsible for maintaining these commodities on inventory until acquired for use by a designated program.

Collection Accumulation Point (CAP)—A non-permitted storage/consolidation facility that provides a centralized facility for receiving, containerizing and storing hazardous waste. Storage of waste is limited to 90 days. The 90-day period starts with the initial usage of the container as defined in the Vandenberg AFB Hazardous Waste Management Plan.

Government Owned Propellants in Drums or Cylinders—Various programs may purchase drums or cylinders containing propellant. However, the containers remain the property of San Antonio Air Logistics Command (SA-ALC) and the movement of containers off the confines of Vandenberg AFB must be pre-approved by SA-ALC.

Hypergolic Storage Facility (HSF)—Consist of two separate storage sites within the confines of Vandenberg AFB. The fuel facility and the oxidizer facility, are located 2,100 feet apart. Each facility is fenced and has above ground storage tanks, transfer pumps and piping, nitrogen storage and supply subsystems, vapor scrubber subsystems, status monitoring and control subsystems, sump pits and holding pond/tank for waste disposal and spill control, a personnel change house, an electrical equipment shelter, a covered propellant CAP storage shelter, and transport trailer and vehicle parking shelter.

HSF Operator—The HSF Operator is the Contractor responsible for operating the HSF. The HSF Operator provides technical expertise for hypergolic propellant operations at the HSF and reports to 30 LSS/LGLF.

Hypergolic Hazardous Waste Collection Accumulation Point (Hyper—CAP)—The Hyper CAPs (oxidizer and fuel) are located at the HSF. These are the only CAPs on Vandenberg AFB where hypergolic propellant waste is allowed to be stored up to the 90 day limit as defined in the Vandenberg AFB Hazardous Waste Management Plan.

Leak—A leak is defined as a portable vapor detector (PVD) reading exceeding 0.0 PPM.

Operation—An operation is defined as any HSF activity involving the transfer, handling, sampling, or movement of commodity/propellant.

Operations Control Center (OCC)—The OCC is the HSF Operator and User focal point for planning, scheduling, and monitoring all operations at the HSF, including emergency coordination, when required. The OCC coordinates directly with the HSF Operator, Program Manager, and the Operations Manager to ensure support is provided to the User without delays or interruption.

Operations Directive (OD)/Test Numbers—Base support requirements for hazardous operations are achieved through the use of Operations Directives/Test Numbers. An OD/Test Number is activated through 30 RANS (range scheduling) and is used as a single document designed to consolidate Base Support for hazardous operations and serves as a combined support and notification directive.

Permit To Operate (PTO)—A permit issued by the Santa Barbara County Air Pollution Control District (SBCAPCD) which establishes the conditions, commodities, operations, and equipment approved for use at the HSF. Any fuels or oxidizers (i.e., MON-10) other than those mentioned in paragraphs 3.1. and 3.2. would require an amendment to the current Vandenberg AFB's Permit to Operate (PTO). 30 SW/ET is the single point of contract with the SBCAPCD for all matters related to air quality. The HSF user shall coordinate any proposed changes to the PTO with 30 SW/ET.

Portable Vapor Detector (PVD)—This instrument is used to detect the presence of low level amounts of nitrogen tetroxide oxidizer or hydrazine-based fuels emanating from equipment or storage vessels at the HSF. Leak checks will be conducted on a daily basis at the HSF and are also performed after hazardous operations to ensure the HSF is in a safe configuration prior to terminating operations.

Protective Equipment Maintenance Operation (PEMO)—This operation provides all required training and life support equipment used in conducting hazardous propellant operations. PEMO services are requested by calling the OCC.

Process—Process is defined in OSHA's 29CFR 1910. 119 as "any activity involving a highly hazardous chemical". These activities, single or in combination, include any use, storage, manufacturing, handling, or on-site movement of chemicals identified in 29CFR 1910.119.

Process Safety Management (PSM)—OSHA's 29CFR 1910.119 Standard contains requirements for the management of hazards associated with processes using highly hazardous chemicals. This Standard applies to the HSF. The Standard establishes procedures for PSM that will protect employees by preventing or minimizing the consequences of chemical accidents involving highly hazardous chemicals.

Sampling—Sampling is the physical collection of a representative portion of an environment. A "representative" sample will be collected and handled so as to keep its original physical form and chemical composition, as well as to prevent contamination or changes in concentration. This will ensure sample integrity.

Self-Contained Atmospheric Protection Ensemble (SCAPE)—This is a fully encapsulated assembly and utilizes liquid air (a mixture of oxygen and nitrogen). The entire unit, including an emergency rescue bottle, weighs approximately 65 pounds. There are two configurations in which the suit may be worn. When the suit is in the CAT I mode, it is comprised of the normal suit ensemble with the addition of an Environmental Control Unit (ECU). When the suit is in the CAT IV mode, it utilizes an external quick-disconnect, Vortex generator, I/E cylinder adapter, and breathing airline for supplying CGA SPEC Grade D breathing air at a minimum of 20 standard cubic feet per minute (SCFM) to *each* SCAPE suit for the duration of the operation to be performed.

Team Chief (TC)—This is a technician located at the HSF who is responsible for ensuring all hazardous operations are properly conducted. The TC receives weather updates, coordinates with the OCC, and monitors OD operations.

Toxic Hazard Corridor (THC)—THC is a safety controlled area within which toxic vapor concentrations are calculated to exceed permissible limits for personnel exposure as the result of a toxicity commodity emission or spill. Its boundary is established by the 30 SW and is based upon mission/spill quantity, location, toxic wetted area, weather conditions, and personnel exposure limits.

User—A "User" is defined as any government agency or contractor involved in any operational or process activity pertaining to the HSF Facility as defined in paragraph 4. of this instruction.

User Categories—These categories are established for use within this instruction to identify the different

levels of user associated with the HSF facility.